THE AMERICAN JOURNAL OF

OPHTHALMOLOGY.

VOL. XV. OCTOBER, 1898. NO. 10.

ORIGINAL ARTICLES.

WHY THE PROPORTION OF BLIND IN CITIES IS LESS THAN IN THE COUNTRY.

BY LUCIEN HOWE, M.D., BUFFALO, N. Y.

IT IS rather a surprising fact that the number of blind in the large centers of population in this country is relatively smaller than the number in the whole State in which the given city is situated. In order to show this at a glance, a table has been constructed which contains in the first column the twenty-five largest cities arranged according to population. In the second column is shown the relative proportion of blind per million in these cities, and in the county in which each is located, and in the third column, the proportion of blind in the entire State. The reason for selecting the population of the county, and not of the city alone is that in some instances, like Boston, for example, the city proper includes a comparatively small part of the thickly settled region. In the next column the proportion of blind is given per million, not only in order to state the ratio more exactly than by the percentage, but also to have this column correspond with similar columns given in the United States census report for each State. Of these twenty-five largest cities in the United States, there are only two in which the number of blind in the city is larger than in the State, and in one of these the difference is exceedingly small.

NUMBER OF BLIND PER MILLION.

City.	In County.	In State.
New York City	496	732
Chicago, Ill	313	741
Philadelphia, Pa	780	747
Brooklyn, N. Y	332	732
St. Louis, Mo	495	917
Boston, Mass	645	824
Baltimore, Md	754	786
San Francisco, Cal	561	645
Cincinnati, Ohio	675	918
Cleveland, Ohio	479	918
Buffalo, N. Y	532	732
New Orleans, La	999	766
Pittsburgh, Pa	494	747
Washington, D. C	789	799
Detroit, Mich	474	776
Milwaukee, Wis	432	725
Newark, N. J	409	581
Minneapolis, Minn	393	493
Jersey City, N. J	421	581
Louisville, Ky	811	1063
Omaha, Neb	177	536
Rochester, N. Y	516	732
St. Paul, Minn	250	493
Kansas City, Mo	635	917
Providence, R. I	772	889

Or, taking all of the cities of over fifty thousand inhabitants together, we find in them about 33 per cent. less of blind than in the average for the entire country. A similar relation has been found to exist in Russia between the blind population in the cities and in the country. Having thus shown the fact, let us next inquire what causative factors are fixed and what ones, by varying, may account for this difference. The various causes of blindness are naturally divided into those which are (1) Congenital, or (2) Acquired, the latter being subdivided into causes due to traumatism, to general diseases, and to local diseases. The first class can, of course, be left out of account. As for traumatism and general diseases there is every reason to conclude that these would be more potent in the cities, where factories and like industries are numerous, and

the general results of crowd-poison more serious, of course, than in the country.

It remains only to consider the local diseases. These are likewise equally common to city and country—except the contagious forms which, of course, can be more rapidly spread in large workshops and residential schools than from one farm to another. But this factor, like the one before, although against the city, is probably balanced about equally by the means afforded for obtaining prompt relief from these, or all other diseases of the eye —that is, by the abundance of physicians and even the super-abundance of hospitals and infirmaries and also by the ready access to them by good roads or by transportation by steam and electricity.

Thus, as we consider the different eye diseases in turn, we find the conditions in regard to each practically the same, or about equally balanced, between city and country, until we come to one disease which in this connection is all-important. That is ophthalmia of infancy. Long ago I suspected, as most others have, that more care was taken to prevent this disease by the use of the silver nitrate solution, or other prophylaxis, by the average well-equipped city doctor, no matter in what social stratum his practice might be, than was taken on the average by his brother in the country, who is necessarily hampered by greater inconveniences and difficulties. Especially did it seem probable that the gain or loss would be great in alms-houses or lying-in institutions, where any variation in the amount of care in this respect would also, in the aggregate, have great and far-reaching effects. Therefore, with the hope of obtaining some data on this point more or less reliable, last year I sent a letter to the physician-in-charge of county alms-houses in New York State, hoping to learn what was the habitual procedure of these practitioners. With other questions, the letters asked the number of births during the previous year, in about what percentage of cases the Credé method was used, and what percentage of children developed ophthalmia of infancy. To these letters forty-seven replies were received—in thirty-eight of these alms-houses children had been born the year before. In only seven of these institutions was the silver nitrate solution used as described by Credé, and three of these seven were from counties belonging to cities of over thirty thousand inhabitants. In other words, such pro-

phylaxis was used in only three out of thirty-four county almshouses in the rural districts. It is fair to assume that this represented the average opinion and the habitual practice in those counties and in others in that State and elsewhere. Now, on the other hand, desiring to learn the opinion and habitual practice of obstetricians at least in one large city, a similar letter was sent to members of the New York Obstetrical Society asking, among other questions, whether it was considered that the silver nitrate solution should be always used in public institutions, and also whether it should be made obligatory there. Replies were received from thirty five members. Twenty-eight of these advocated its invariable use in public institutions, and twenty-two of them thought that it should be made obligatory there. It is fair to assume again that this represented the average medical opinion and habitual practice in that city and in others in that State and elsewhere. It is also proper to note that this opinion of obstetricians relates to "public institutions" of any kind, and it is quite probable, if asked whether or not the so-called Credé method should be made obligatory in alms-houses only, there would be not simply this large majority to advocate it, but they would be almost unanimous in doing so.

These thirty-eight attending physicians of county almshouses, on the one hand, and thirty-five obstetricians on the other, might alone serve to indicate the rather different views and methods of the two classes of practitioners. But it is possible to approximate a little nearer to the frequency with which the silver nitrate solution is used in the city as compared with the country, by noting what the practice is in general hospitals and similar institutions which are not county almshouses.

In order to ascertain this, a letter of inquiry was sent to these institutions in New York State, with the same questions, so far as concerned the use of silver nitrate, as to the almshouses. Among the replies received, in thirty-five of these institutions children had been born the previous year, in thirteen the Credé method was invariably used, in four it was used with some modification, in five it was used in suspicious cases, in thirteen the average number of births was three and in none of these had the silver nitrate been used.

Considerable space might be devoted to the analysis of

these figures, small though they be, but for our present purpose it is sufficient to state the general rule, which is, that silver nitrate is used as recommended by Credé, in the larger institutions in the large cities, and this and other methods of prophylaxis omitted in the smaller ones. In the first class given above are most of the metropolitan lying-in hospitals, such, for example, as the Sloane Maternity, the Lying-in Hospital, Bellevue, and others of that class, whereas the thirteen at the other end of the list include for the most part small institutions in small cities or the larger towns. It might almost be said that the regularity and care with which the Credé method is used, is in direct ratio to the number of births in the institutions. All of these data, with others, have been already referred to elsewhere, and are still in the process of elaboration.

I am aware that the figures are too small, from even a single State, to serve as a basis for any valuable calculation. But I do think that anyone who studies them carefully will conclude that, in general, a decided difference does exist between the practice of obstetricians in the cities and these physicians-in-charge of county alms-houses. And what is true of one State is probably true of others.

In order to appreciate the very great effect produced by even a slight but habitual variation of this factor, it is necessary to recall briefly the well-established data in regard to such prophylaxis, and to the frequency of the disease itself. The evidence in regard to the effect of solutions of silver nitrate and of other methods of prophylaxis has been gradually collected, during nearly twenty years, as published from the combined experience of different obstetricians in different countries, until now there are accurate records of over fifty-four thousand births, and among these the silver nitrate solution having been used over twenty-four thousand times. These data not only show, as has been frequently pointed out, that the silver nitrate solution is the best, taken altogether, that is thus far known, but that without it, the percentage of cases of ophthalmia is about fourteen times as great as when no precaution is taken. Now it is also equally well known that this disease produces, with possibly a single exception, more blindness than does any other; evidently, therefore, any tendency to neglect this precaution or some other equally effective, in the country, as compared with the city, would tend to multiply

the victims of the disease much more rapidly in one locality than in the other.

To recapitulate, the points to which attention is called are:

1. Blindness is more frequent in the country than in the cities.

2. On examining the different factors in the production of blindness we find that these are either the same or made practically the same in city and country with one exception. This exception is ophthalmia infancy.

3. A comparison of statements made by thirty-eight county alms-houses and by thirty-five obstetricians in the most populous State in the Union, indicates that decidedly less attention is given to guarding against ophthalmia of infancy; especially is the silver nitrate used less as a prophylactic in the country than in the cities.

4. This tendency on the one hand to habitual neglect, or on the other hand, to habitual use of such prophylaxis, is not only the most apparent cause of such variation—if, indeed, any other reasonable cause can be discovered—but it probably accounts for the larger part of this difference in the distribution of the blind.

If that proposition is warranted—and it seems to be—the corollary from it is important, as it indicates what might be done if this prophylaxis or some other equally effective were universally used. As the cities of fifty thousand inhabitants and upward in this country show an aggregate of six thousand two hundred and seventy-two blind persons, and as the number is, as before stated, about 33 per cent. below the average for the whole country, it follows that if the same care were universal, the number in the country districts could also be reduced to 33 per cent. This would mean a total saving of not simply hundreds but at least a few thousand from blindness. It is beyond the scope of this paper to refer to the question of legislation to enforce proper prophylaxis. As far as private practice is concerned, parents will insist upon their own methods, as they have a right to do, in a free country. But as to children in alms-houses, who are specially the wards of the State, who must be supported by the State if they become helpless, and for whom it is the duty of the State to obtain the best treatment known, it does seem that we, as ophthalmologists, should join with the expert obstetricians, so large a

proportion of whom apparently believe that the Credé method should be made obligatory in public institutions.

Or, if it appears a dangerous precedent to advocate any one method of treatment, no matter how excellent that may be, it is at least possible to advocate this with any other equally effective prophylactic which may be found in the future, and thus avert to some extent this wanton and continued destruction of vision.

THE TREATMENT OF ENTROPION OF THE LOWER LID WITH CAUSTIC POTASH.[1]

BY SAMUEL THEOBALD, M.D., BALTIMORE, MD.,

CLINICAL PROFESSOR OF OPHTHALMOLOGY AND OTOLOGY, JOHNS HOPKINS UNIVERSITY.—SURGEON, BALTIMORE EYE, EAR AND THROAT CHARITY HOSPITAL.

ALTHOUGH in the just issued, third volume of Norris and Oliver's "System," I find in Dr. Harlan's chapter upon "Diseases of the Eyelids," this statement—"The formation of cicatrices by actual or potential cautery (for the cure of entropion) was formerly practiced, at first by the Egyptians, but may be considered obsolete," I still have the hardihood to bring before the Society the subject described in the title of this paper and to speak rather enthusiastically of the favorable results which, in suitable cases, this method of treatment yields.

At the outset it may be stated that the cases to which it is pre-eminently adapted are those of senile entropion, from relaxation of the lid tissues, but that it also yields good results in those which are consequent upon trachoma and are attended by an in-curving of the tarsal cartilage.

To those who have had no experience in this method of dealing with entropion of the lower lid the questions would naturally suggest themselves: Why use a caustic rather than the knife to accomplish the end in view? And, if a caustic agent is to be employed, why select caustic potash rather than than the galvano- or thermo cautery? My answer would be that it is not an easy matter to determine just how much tissue to remove with the knife, and that from an experience with both

---

[1]Read before the American Ophthalmological Society, July 19, 1898.

methods I have found the desired effect can be obtained more exactly with the caustic than with the knife. It would seem, moreover, that the destruction of a given amount of tissue by the potash produces a somewhat greater mechanical effect than the removal of the same amount with the knife. As to the choice of a caustic agent, the potash, though painful, can be readily used with the aid of a local anæsthetic, whereas the application of the actual cautery in such close proximity to the eye is impracticable without the induction of general anæsthesia.

There is not, so far as I am aware, anything novel in the manner in which I have employed the potash; but to those who may wish to try this plan of treatment a few suggestions as to details may be useful.

In the first place, the crayon of caustic potash must not have too blunt an extremity, otherwise it will be difficult to apply it with the requisite degree of exactness. The sharpening is easily accomplished by rubbing the end of the crayon upon moistened blotting-paper, whereas to sharpen it with a knife is exceedingly difficult.

Soaking the lids for ten or fifteen minutes with a strong solution of cocaine appreciably lessens, though it does not annul, the considerable pain which the action of the caustic produces.

In applying the caustic our aim should be to produce an eschar 3 to 4 mm. in width, parallel with the lid margin and extending the whole length of the tarsus. At no point should the action of the caustic be allowed to approach nearer the margin of the lid than $1^1/_2$ to 2 m.m., and as the destruction of tissue tends to spread considerably beyond the actual point of contact of the crayon the line of application of the latter should be about 4 mm. from the ciliary border. Along this line, the lid meantime being everted and kept well upon the stretch, the crayon should be drawn back and forth several times, until the epidermis is destroyed and the tissues beneath begin to assume a brownish color. Holding the lid carefully so that it shall not become inverted, the action of the caustic is allowed to extend as far as may seem desirable, when it should be arrested quickly by the application of an acid solution. Vinegar diluted with an equal quantity of water answers

well for this purpose, or acetic acid diluted with water to about the same strength may be used, if more convenient.

Within a few minutes the eschar begins to contract, and when the lid is released it is usually found that the tendency to entropion has been already overcome. A simple dressing may be applied if thought desirable; but it seems to be a work of supererogation, as the cases always do well without this precaution.

It is seldom necessary to repeat the application of the caustic, but this can be readily done if the effect of the first application has proved insufficient. Although at first there is considerable soreness and tumefaction of the lid this soon disappears, and after a few weeks all traces of the eschar have disappeared and it is usually not possible to detect that any operation has been performed.

A number of cases, especially cases of senile entropion, operated upon successfully in this manner might be related, but this would occupy unnecessarily the time of the Society. I may mention, however, that my associate, Dr. Reik, has recently operated in this way with complete success upon a case of entropion of the lower lids due to trachoma, in which Green's operation was required upon the upper lids, and that a few weeks since I operated upon a similar case with equal success, although in this instance a second application of the caustic was necessary.

In conclusion, I may emphasize the point that this method of operating is suited only to entropion of the *lower* lid. In entropion of the upper lid the tarsal cartilage, which is thicker and broader than in the lower lid, usually plays a more important part in the production of the deformity, and not much can be expected from any procedure which involves little else than the removal or a portion of the external integument.

ANOTHER CASE OF HÆMORRHAGIC GLAUCOMA, WITH THE CLINICAL DIAGNOSIS OF PREVIOUS THROMBOSIS OF THE CENTRAL RETINAL VEIN.

[WITH MICRO-PHOTOGRAPHS.]

EXAMINATION BY ADOLF ALT, M.D., ST. LOUIS, MO.

CLINICAL HISTORY BY W. A. SHOEMAKER, M.D., AND J. ELLIS JENNINGS, M.D., ST. LOUIS, MO.

THE EYEBALL which forms the subject of the following paper I owe to the kindness of Drs. S. Pollak and J. Ellis Jennings.

Although the number of carefully examined eyes with the clinical diagnosis of hæmorrhagic glaucoma is growing, I do not think it is so large, that it should no longer be our duty to report every such case. The case to be described in the following pages differs in a number of particulars from the one I reported two years ago (see AMERICAN JOURNAL OF OPHTHALMOLOGY, Vol. XIV, No. 4), especially in some of the microscopical conditions. The eyeball, furthermore, was enucleated only about four months or more after the beginning of the disease, while in my former case the glaucoma was as yet a recent trouble at the time of enucleation.

The following are the notes on the clinical history of the case, as kindly furnished me by Drs. Shoemaker and Jennings.

Dr. Shoemaker writes:

"Mrs. G., aged 36 years, came to see me on August 19, 1897. She had been suffering from 'heart trouble' for about one year. About seven weeks previously she went to Colorado on the advice of her physician. About six weeks previously, while walking in the streets of Denver, she noticed that vision in her left eye became suddenly poor. There was no pain.

"STAT. PRÆS.—L. E., slight ciliary injection. The pupil is slightly larger than in the R. E. and does not respond to light. V. = perception of light. The media were very dim, still I succeeded in making out extensive intra-ocular hæmorrhages. T. + 1 ?. My diagnosis was proboble thrombosis of the central retinal vein.

"I ordered iodide of potassium and bichloride of mercury, but told her that vision was permanently lost, yet I would try to save the eyeball.

"By means of instillations of pilocarpine I kept her eye comfortable for about one month. After that she began to have pain in the eye and the tension became more increased. This condition was, however, variable. About this time I left for my vacation and she drifted into the hands of Dr. S. Pollak of this city."

Dr. Jennings writes:

"Mrs. G., aged 36 years, came to the eye clinic of the Mullanphy Hospital on November 23, 1897, complaining of severe pain in and around the left eye.

"HISTORY.—For the past fifteen years she has suffered from frequent attacks of rheumatism associated of late with heart complications, *i. e.*, pericarditis, endocarditis, and hypertrophy. Toward the end of June, 1897, she took a trip to the Pacific Coast, stopping over for a few days in Denver. While there she had a bilious attack, with fever, vomiting, dizziness and lightness in the head, and a sudden failure of vision in the left eye. Objects, especially those directly in front of her, appeared dim, and as if seen through a fog. There was no pain or redness of the eye. She continued her journey to California and after a visit of six weeks returned to St. Louis. Here, at the suggestion of her physician, Dr. T. A. Martin, she was seen by my friend Dr. Shoemaker, whose report is given above and who made the diagnosis of thrombosis of the retinal vein with extensive hæmorrhages scattered over the fundus.

"On October 28, the eye suddenly became inflamed and this was accompanied by violent pain so that the patient was unable to sleep. The pupil was dilated, T. + 2, but the anterior chamber was deep. A diagnosis of secondary glaucoma was made, and eserine instilled but with little or no benefit. She then drifted, and came to consult Dr. S. Pollak and myself at the Mullanphy Hospital on November 23, 1897.

"The eyeball was now very much injected, the pupil widely dilated, the anterior chamber shallow, the cornea dim, the media were hazy so that no fundus examination was possible. T. + 2. Heart very irregular. We ordered instillations of eserine, but as they did not relieve the symptoms, the eyeball was enucleated November 29."

When the hardened eyeball was cut in two it showed, on gross examination, plainly a deep excavation of the optic papilla. The region of the macula lutea was wrinkled and thickened, and had a mottled appearance due to whitish-grey and rust-brown spots (hæmorrhages). The whole of the retina as far forward as the ora serrata showed innumerable small roundish hæmorrhagic spots differing greatly in size and shape. The anterior chamber was reduced to about one-third of the normal by the angular adhesion of the iris periphery to the cornea; the lens was also pushed forward towards the abnormally situated iris. The vitreous body seemed clear and not tinged with blood.

I cut half of the eyeball into meridional, the other into æquatorial sections. The microscopical details are described in the following.

The corneal tissue proper shows no particular alteration, except at the limbus a small cell infiltration, which is especially marked around the conjunctival vessels and their corneal loops. The epithelium is slightly irregular, in places cells are wanting. Descemet's endothelium appears normal, except in a number of place where small accumulations of round cells are attached to it and protrude into the anterior chamber. These round cell nodules are mostly situated in the lower half of Descemet's membrane and just above the attachment of the iris. In their neighborhood the cells of the endothelium are proliferating, some showing two nuclei, some being changed into large round vesicular cells.

The iris periphery is firmly attached to the inner surface of the cornea, more so in the lower half of the eyeball, than in the upper half; in the former to about one-third of the iris-tissue. The attachment is plainly due to a newly-formed tissue between Descemet's membrane and iris, as has often before been described in cases of glaucoma. In our case the formation of such a tissue is still going on, particularly in the lower iris-angle and it spreads over the anterior surface of the iris to the pupillary edge forming several lamellæ. Here its contraction has produced a very broad ectropium uveæ, so that even the sphincter pupillæ is folded to some extent back on the anterior iris surface. (See Figs. 1 and 2). The blood vessels in the attached part of the iris are gorged with blood, while in the free part of the iris all blood vessels are empty and their

walls are considerably thickened and have undergone a hyaline metamorphosis. Schlemm's canal is obliterated in almost all of the sections, while in some there is still a small lumen filled with blood.

FIG. 1.

The ciliary body and processes are atrophic throughout, but more so in the lower half. The intra-muscular connective tissue is filled with round cells. The connective tissue of the ciliary processes is especially atrophied, yet their blood vessels (probably mostly veins) are gorged with blood. The peculiar dropsy or perhaps mucoid metamorphosis (see AMERICAN JOURNAL OF OPHTHALMOLOGY, Vol. XIII, No. 1) of the retinal layers of the ciliary body is in this eye much more developed than in the eye formerly described. In a number of places two and three adjoining ciliary processes have become adherent to each other and the resulting cyst-like round or oval

cavities are filled with these altered retinal cells, forming a solid mass of tissue, or they are only lined with one or more layers of these vesicular cells and contain a coagulated fluid. These same changes I have now seen so often in glaucomatous eyes, that it seems as if they were the direct result of glaucoma and caused by the pressure in the manner in which I tried to explain them in my paper, just referred to above.

FIG. 2.

The crystalline lens shows the beginning of the formation of cataract; changes which are, however, not characteristic of glaucoma and need find no place here.

The optic papilla is atrophied and deeply cupped (see Fig. 3), the lamina cribrosa being pushed back to a considerable extent. Some threads of newly-formed tissue are seen stretching from side to side within the cup. The optic nerve is atrophied throughout. The greatly thickened connective tissue trabecu-

læ show cell proliferation and infiltration. This inflammatory condition is most marked just where the nerve was cut off. The blood vessels, both arteries and veins are empty. The main stem of the central artery is very wide, while the vein as far as the specimen reaches shows nothing particular, more especially no thrombosis. The real pathological changes of the blood vessels of the retina begin just where the central blood vessels split up into their branches in the remnant of

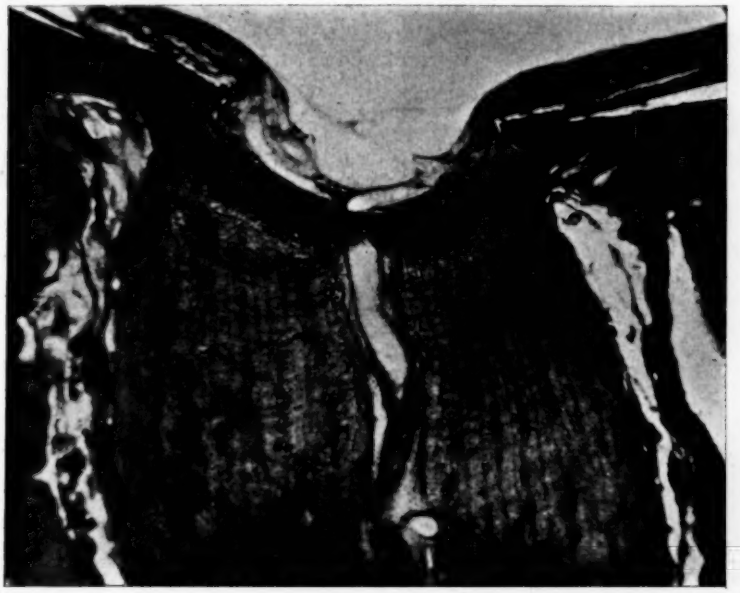

FIG. 3.

optic nerve tissue which forms the walls of the cup. From here on and throughout the extent of the retina the arteries have immensely thickened walls which are undergoing a hyaline metamorphosis. Some of these arteries and arterioles still have a lumen, which in places contains blood, in others is empty, yet I have found no signs of endo-arteritis. Most of the arteries, however, are closed altogether in consequence of the peri-arteritis. Just at their beginnning in the cup and close to it, the larger branches, in spite of the great thickness of their walls, have an abnormally wide lumen, as if they were beginning to form aneurysmata.

The retinal veins proper are mostly empty and totally collapsed or the lumen is hardly visible. In a few of the larger branches, and especially in the space between the papilla and macula lutea, I found hyaline thrombi.

The hæmorrhages pervade the whole retina. They involve all its different layers and have in some places broken through the limitans externa and thus caused small hæmorrhagic detachments. There are the remnants of old hæmorrhages in regressive metamorphosis, hæmorrhages of a more recent date just becoming disintegrated and many apparently perfectly recent ones. Where I could find the ruptured vessel from which a hæmorrhage had started it was invariably an artery. I found no rupture of the limitans interna and consequent hæmorrhage into the vitreous body, although in the macular region it is detached and pressed inwards in folds.

The oldest and most extensive hæmorrhages were in the macula lutea and its immediate neighborhood. They were mostly represented by large cavities in the retinal tissue filled with fibrine and coagulated masses. In the fovea centralis a few fibrous layers were all that represented the former tissue.

Aside from the changes directly due to the actual or former presence of hæmorrhages in the retinal tissue, the rods and cones, the ganglionic and nerve-fiber layers show the most radical changes. The rods and cones are almost throughout disintegrated so as to be unrecognizable. The ganglionic cells have largely disappeared, particularly near the æquator and forward from it. The same change has taken place in the nerve-fiber layer, the nerve fibers having almost totally disappeared, so that Müller's supporting fibers are plainly visible and, in fact, are almost all the tissue left in this layer, especially near the æquator and forward from it.

The inner granular layer is throughout thinner than in the norm but varying in thickness and irregular in its arrangement. The outer granular layer seems to be of the normal thickness, but it contains (aside from still visible hæmorrhages) numerous oval and round spaces, where probably at some former time, small hæmorrhages had pushed its elements apart.

The venous blood vessels of the choroid are mostly gorged with blood, their walls hyaline and thickened, especially so at the posterior pole of the eye (and in the ciliary body). The arteries are mostly empty and collapsed. In one place near

the æquator I found a choroidal vein ruptured and the hæmorrhage causing a hæmorrhagic detachment of the retina.

The ciliary arteries in the little tissue which is attached to the external sheath of the optic nerve, show also a peri-arteritis and besides an endo-arteritis obliterans.

The eye, like the one first reported by me, was hypermetropic.

When comparing the conditions of this case with the ones in the case described previously by me, considerable differences are found. In the former case the vascular disease in the retina was almost confined to the venous blood vessels, while in the present case there was a wide-spread, almost total peri-arteritis and a thrombosis of some branches of the central retinal vein within the retina (see Fig. 4). Whether there was

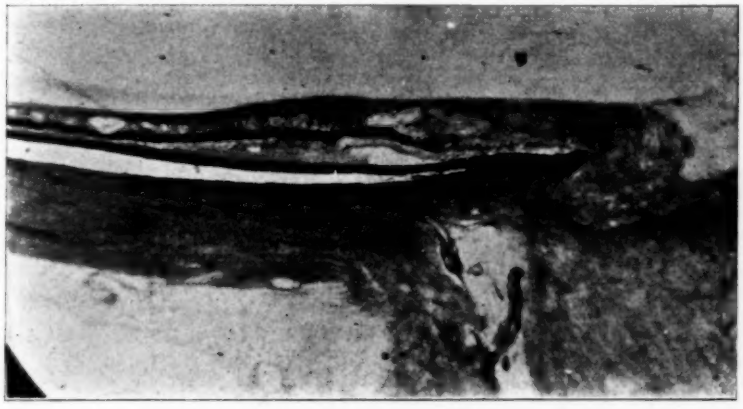

FIG. 4.

a thrombus also farther back in the main trunk of the central vein it is impossible to say, yet the cell infiltration at the very end of the excised part of the optic nerve makes this seem not improbable. The destruction caused in the retinal tissue by the hæmorrhages due to this universal vasculitis show nothing unusual. No direct rupture into the vitreous was found in this eye, although at some time such has undoubtedly taken place. However, a vascular disease was also found in the choroid and in the posterior ciliary arteries, thus showing that in this case, at least, the whole vascular apparatus of the eyeball was in a pathological state.

The cup in the optic papilla in this case was very deep and unmistakable (See Fig. 3)

That at some time of the affection blood had entered the anterior chamber and clogged the filtration channels in the iris angle is evidenced by the conditions found in that part of the eyeball, as detailed above.

For further considerations on this form of secondary glaucoma following hæmorrhages in the retinal tissue, I must refer the reader back to my former paper on this subject (see AMERICAN JOURNAL OF OPHTHALMOLOGY, Vol. XIV, No. 4).

CASES FROM THE CLINIC.

BY HENRY DICKSON BRUNS, M.D., NEW ORLEANS, LA.,

PROFESSOR OF DISEASES OF THE EYE, NEW ORLEANS POLYCLINIC,—SURGEON-IN-CHARGE OF THE EYE DEPARTMENT, EYE, EAR, NOSE, AND THROAT HOSPITAL, NEW ORLEANS, LA.

CORNEAL ULCERS TREATED WITH FORMOL.

CASE 1.—A negress, aged 22 years, whose R. E. has been sore three weeks. General health and appearance is fair. Applied for treatment October 14, 1895, at which time she had a moderately severe kerato-iritis with marginal corneal ulcers. Atropine (gr.j to ʒj) was at once instilled and very frequent hot bathing at home ordered. V., R. and L., $^{20}/_{20}$.

October 15. Pupil fairly well dilated. No synechiæ. Atropine again instilled and a solution of formol 1 to 1000, followed by hot bathing, is ordered dropped in every hour.

October 26. Better. No iritis. Ulcers becoming vascular.

November 5. Looking well, but ulcers sluggish. Calomel insufflated every other day.

November 30. Cured. Duration of treatment, 47 days.

CASE 2.—A negro applied for treatment October 19, 1895. He is 29 years of age, robust, and thinks he got something in R. E. four days ago. V. of this eye, $^{20}/_{20}$. The foreign body is removed from the cornea under cocaine anæsthesia, the ulcerated spot scraped, and the use of a 1 to 1000 formol solution ordered every hour, followed by hot bathing.

October 22. After 4 days of treatment R. E. is well.

CASE 3.—A white man, aged 33 years, a sheet iron worker, whose general health is only fair. Had intermittent fever five or six months ago. Applied for treatment January 31, 1897. He thinks he got something in R. E. six days ago. There is a foreign body on the cornea causing acute kerato-iritis with hypopyon and V.=$^{30}/_{100}$ only. He has been using tea-leaf and milk and bread poultices. The foreign body is removed under cocaine, and a strong atropine solution is instilled, under which the pupil dilates evenly, and a 1 to 1000 formol solution, followed by hot bathing, is ordered for home use.

February 7. In 1 week the eye is practically well.

February 21. In 3 weeks is discharged, with V., R. E. $^{20}/_{30}$.

CASES OF NEURO-RETINITIS GREATLY BENEFITTED BY LARGE DOSES OF POTASSIUM IODIDE.

CASE 1.—A white man, aged 35 years, of feeble general health, and with a past history of syphilis, applied April 23, '95. V., R. E., $^{20}/_{50}$; L. E., $^{20}/_{200}$. Has neuro-retinitis with incipient optic atrophy. Given $^{1}/_{8}$ of a grain of mercury bichloride and 8 grains of potassium iodide three times daily. Ordered to be careful to keep mouth and teeth clean.

May 7. Increased potassium iodide to 12 grains t. i. d.

May 11. Feels better. Inunction of mercurial and belladonna extract ointment on temples and forehead daily.

May 18. V., R. E., $^{20}/_{30}$; L. E., $^{20}/_{50}$.

June 6. Hypodermic use of strychnia begun.

June 15. V., R. E., $^{20}/_{20}$; L. E., $^{20}/_{30}$, doubtfully.

July 23. V., R. E., $^{20}/_{20}$; L. E., $^{20}/_{30}$, doubtfully.

CASE 2.—On May 4, 1895, a negress, aged 38 years, a child's nurse, applied at the clinic saying that her L. E. had been failing one year. V., R. E., $^{20}/_{20}$; L. E., fingers at 10 feet.

May 7. She was found to have neuro-retinitis, hæmorrhagic, L. E., and was put on potassium iodide, 10 grs., t. i. d.

May 11. Vision being practically unchanged, the dose was increased to 20 grains t. i. d.

June 3. V., R. E., $^{20}/_{20}$; L. E., $^{20}/_{200}$, and the dose was increased to 30 grains.

June 24. V., R. E., $^{20}/_{20}$; L. E., $^{20}/_{200}$. The dose was increased to 40 grains, but the patient disappeared.

CASE 3.—White man, aged 57 years, applied June 8, 1895. Sight failing in L. E. one month and a half. He has been hav-

ing bad colds with a cough of late. V., R. E., $^{20}/_{30}$; L. E., fingers at 9 feet. Ophthalmoscope shows neuro-retinitis, hæmorrhagic, of L. E., and potassium iodide, grs. 10, is ordered three times daily.

Jude 15. Condition is unchanged and the dose of potassium iodide is doubled.

June 22. V., R. E., $^{20}/_{20}$; L. E., $^{20}/_{100}$.

July 1. Potassium iodide increased to 40 grs. three times daily.

July 16. Increased dose to 50 grs. three times daily.

July 20. V., R. E., $^{20}/_{20}$; L. E., $^{20}/_{70}$. The patient never again returned.

Prompt Improvement in Incipient Atrophy of the Optic Nerve Under Full Doses of Strychnia Sulphate.

Case 1.—White man, aged 36 years, a reporter for a daily paper, came to the clinic April 4, 1895. Is anæmic and frail looking. His sight has been failing gradually of late. Several years ago he had a similar attack, which was cured. He is an intelligent man, aware of the nature of his malady, and says that there are several persons blind, he believes, from atrophy of the optic nerves, in his family. V., R. E., $^{20}/_{40}$; L. E., $^{20}/_{30}$; the optic discs are a pale bluish-white. Strychnia sulphate, gr. $^{1}/_{32}$, once daily, to be rapidly increased, is ordered.

April 13. Strychnia sulphate, gr. $^{1}/_{32}$, four times daily. V., R. and L. E., $^{20}/_{30}$.

April 30. V., R. E., $^{20}/_{20}$ well; L. F., $^{20}/_{20}$ fairly.

May 11. V., R. and L. E., $^{20}/_{20}$ well.

May 25. The improvements holds; V., R. and L. E., $^{20}/_{20}$ well. To take gr. $^{1}/_{32}$ strychnia sulphate twice daily for a month yet. The patient did not alter his habits or employment and nothing except the strychnia was given.

Albuminuric Retinitis With Great Impairment of Vision; Great and Rapid Improvement Under Simple Treatment.

Case 1.—White man, aged 48 years, presented himself at the clinic January 18, 1895; says his general health is good; that two years ago, in South America, he become suddenly blind, without cause, so far as he knows. His sight has come

gradually back to the present point; V., R. and L. E., $^{10}/_{200}$. The ophthalmoscope reveals typical albuminuric retinitis, and a specimen of his urine is sent to the pathological department. The department reports: Reaction, acid; specific gravity, 1012; granular casts and 5 per cent. (by bulk) of moist albumen. The man in no way resembles a Brightic patient, but a gloomy prognosis is made. Five grains of potassium iodide and $7^1/_2$ minims of tincture digitalis are ordered, to be taken three times daily.

February 18. V., R. and L. E., $^{20}/_{50}$.

March 4. V., R. and L. E., $^{20}/_{30}$. Feels so well that he takes his leave, 46 days after treatment was begun. During this time he has had no work to do; could live well, following a good régimen, and drinking water copiously.

TIME REQUIRED FOR RECOVERY IN SEVERE TOBACCO AMBLYOPIA.

CASE 1.—White man, stone-cutter, aged 47 years. Eyes have been weak two months. General health good, but uses tobacco to great excess. Came to clinic May 10, 1898. V., R. E., $^{20}/_{100}$; L. E., $^{20}/_{400}$. Ophthalmoscope shows the temporal sides of discs to be pale. Ordered total abstinence from tobacco.

June 11. V., R. E., $^{20}/_{50}$; L. E., $^{20}/_{200}$. Put on gr. $^1/_{32}$ of strychnia once daily.

June 22. No change in vision. Strychnia increased to gr. $^1/_{24}$ twice daily.

July 5. V., R. and L. E., $^{20}/_{40}$; O. U., $^{20}/_{30}$.

July 18. V., R. E., $^{20}/_{70}$; L. E., $^{20}/_{70}$. Strychnia now discontinued for two weeks.

August 9. V., R. and L. E., $^{20}/_{50}$. Strychnia resumed.

September 9. V., R. E., $^{20}/_{30}$; L. E., $^{20}/_{40}$. Discontinued treatment.

October 14. V., R. E., $^{20}/_{20}$ fairly; L. E., $^{20}/_{30}$ fairly. Practically well. Time required for recovery, 5 months.

PHLYCTENULAR OPHTHALMIA — "PHLYCTENULE EN PLAQUE."

CASE 1.—Negro school-boy, aged $13^1/_2$ years, come to the clinic May 7, 1894. Complains of burning and lachrymation when reading, for the last few days. V., R. and L. E., $^{20}/_{20}$. The eyes are much injected and instead of discrete phlycten-

ulæ there are *plaques* of infiltrated material slightly elevating the conjunctiva of the R. E. outwards and downwards, and in the L. E. inwards and downwards. These *plaques* are of a uniform red color, marked with larger blood vessels, and might be compared in appearance to inflamed pterygia. Here and there on the elevated area are points of superficial ulceration exactly like the ordinary phlyctenules at a late stage. For two weeks calomel is dusted into the eyes every other day and then yellow oxide of mercury salve, and hot baths are used twice a week. In 42 days the patient was dismissed cured; V., R. and L. E., $^{20}/_{20}$.

CASE 2.—A negress, aged 22 years, came to the clinic on June 22, 1894. V., R. E., $^{20}/_{70}$; L. E., $^{20}/_{50}$. Her R. E. had been sore three weeks. On the horizontal meridian of this eye, both inwards and outwards, bordering upon and coming up to the corneal margin, are two large *plaques* resembling the infiltration of episcleritis, but more florid in hue. The edge by which they border upon the cornea elevated about 2 mm. and concave. There is a swollen lymphatic gland on the left side of the neck. Yellow oxide of mercury salve once a day and hot applications four times daily are ordered. In a short time she quit, almost perfectly well.

CASE 3.—A negro, aged 25 years, came to the clinic July 23, '94. His appearance is scrofulous and he had a similar attack five months ago. His R. E. has been affected only a few days. V., R. E., $^{20}/_{100}$; L. E., $^{20}/_{15}$. This is a severe case. The eye is greatly injected and there is infiltration *en plaque* almost entirely around the cornea. He is ordered atropine, yellow oxide of mercury salve and bathing with hot borax water daily. Unfortunately this patient never returned.

This condition of infiltration of phlyctenular material *en plaque* I have only observed in negroes, but in them frequently, and have not seen described in any of our text-books. The subjects are usually very "scrofulous" and the local symptoms severe. Ulceration takes place over areas, as a rule, no larger than the common discrete phlyctenule, though sometimes apparently by coalescence the area is two or three times as large. Upon superficial observation it might be confounded with the spring catarrh of the continental writers, but only before ulceration has set in. The disease seems to yield as readily to mercurials, locally applied, as any severe case of phlyctenular

ophthalmia, a malady to which the negro race is peculiarly susceptible. In this race I have seen phlyctenular ophthalmia in much severer forms, more persistent in relapsing, more destructive in effect, and at a more advanced age than I have in the white.

Deterioration of Central Vision in Internal Concomitant Strabismus With Return to the Normal After Strabotomy.

Case 1.—A white school-boy, aged 9 years, came to the clinic July 9, 1894. V., R. E., $^{10}/_{200}$; L. E., $^{20}/_{15}$. Has an internal concomitant squint of R. E. Thinks he has been "permanently" cross-eyed for two years. Before that he only squinted at times. General health good.

July 26 Right internal muscle divided under cocaine. Correction not quite complete.

September 24. V., R. E., $^{20}/_{40}$. Eyes still converge.

September 26. Divided left internal rectus under cocaine. Correction perfect.

September 27. V., R. E., $^{20}/_{30}$.

October 22. Discharged cured. V., R. and L. E., $^{20}/_{20}$.

The interest of this case depends not only on the improvement in vision of the right eye, for this not infrequently occurs after strabotomy, though the degree of improvement is seldom so great, but upon the fact, of which the senior assistant is perfectly confident, that the vision of the right eye deteriorated during the time that the boy had, to use his own language, a "permanent" squint of this eye. Two years before his admission to the clinic, this boy was examined by Dr. Jowers, who is sure that his vision in each eye was $^{20}/_{20}$ at that time.

Ruptures of the Choroid.

Case 1.—White boy, aged 10 years. Was struck on right eye one month ago. V., fingers at 6 feet. Ophthalmoscope shows a large, partial tear of choroid immediately to the outer side of the optic nerve and another large tear completely through the choroid in the macular region.

Case 2.—A white, German laborer, aged 47 years. Nine years ago he received a heavy blow directly *between* the eyes and ever since his right eye has been poor; V., $^{20}/_{40}$. With the ophthalmoscope a rupture of the choroid is observed.

CASE 3.—White man, aged 26 years. About twelve years ago he was struck on nose and right eye with splinter of wood For three years he has had attacks of pain, one or two a month, worse in summer and in the daytime over the right eye. He "blows big scabs from the right nostril." He believes the sight of right has been bad "as long as he can remember." V., R.E., fingers at 9 feet. Ophthalmoscopic examination reveals a large rupture of the choroid in the macular region.

COLOBOMA OF THE CHOROID.

CASE 1 —A white school-girl, aged 10 years, of good general appearance and health. One year ago, she says, she began to notice she could not see well with right eye. Vision of this eye is now only fingers at 6 inches. Examination of fundus through the dilated pupil shows an unmistakable coloboma of the choroid of large size extending down and outwards from the optic nerve almost to the equator of the globe. Just above the end of the coloboma and close to the macula is another round hole in the choroid about the size of the optic disc. The condition must have been congenital, yet the child noticed the almost total blindness of this eye only one year ago.

ATROPHY AND FATTY DEGENERATION OF THE RETINA FOLLOWING MALARIAL RETINAL HÆMORRHAGE.

CASE 1.—A negro farmer, aged 27 years. Two years ago he had malarial chills and fever and his eyes became suddenly blind. His general health is now good and his vision is reduced to l. p. O. U. Ophthalmoscopic examination shows very plainly an atrophic state of the retina with small white patches here and there in its substance which seemed to me areas of fatty degeneration. From the clear history of the malarial attack and the sudden onset of the blindness I can not but conclude that the present condition is due to malarial hæmorrhage into the retina. The case is of great interest to me, because I have never before seen such complete blindness produced by this disease. I have long been interested in this particular effect of the malarial poison and as far back as 1883 (*New Orleans Medical and Surgical Journal*, December), and 1888 (*Medical Record*, July 14), published articles upon the subject narrating illustrative cases. As a rule, the blindness

produced is moderate in degree, unless the hæmorrhage be situated exactly at the macula, its duration short, and the recovery very complete. For these reasons it is seldom that we have the opportunity to examine the effect produced in the retina so long after the occurrence of the hæmorrhage. Strange to say this form of retinitis is not mentioned in the text-books of either Norris and Oliver (1893) or Fuchs (1892), but Noyes (1890) mentions it, citing the observations of Kipp. The pathology seems to be related to leukæmia and pernicious anæmia rather than to malarial hæmaturia, although I have never had the opportunity of examining the eyes in the latter condition. The hæmorrhages are almost always rounded (in deep layers) not feathery.

Removal of the Lens in High Myopia.

Case 1.—White school-girl, aged 12 years, of good general health, came to the clinic January 14, 1895. She can not see well unless she brings things very close. Can not tell when she first noticed this. Has had glasses, but they did not give satisfaction. V., R. E.=$^{4}/_{200}$ with — 20 D. s.=$^{20}/_{50}$; L. E.=$^{5}/_{100}$ with — 18 D. s.=$^{20}/_{50}$ doubtfully. Ophthalmoscope shows pronounced conus each eye. She was placed in charge of one of the assistant snrgeons who gave potassium iodide gr. 10 t. i. d., and advised removal of the right lens.

January 25. Atropine in right eye.

January 30. Pupil well dilated; the surgeon broke up the right lens thoroughly with a needle under cocaine anæsthesia.

January 31. Little reaction and no pain. Lens thoroughly broken up and opaque. Atropine instilled and ordered to be used twice a day at home. Tn.

February 6. Tn. Very moderate circumcorneal injection. Lens being absorbed above and below.

February 13. Same surgeon removed two-thirds of lens substance with Lippincott's syringe, but lost a little vitreous in so doing. Atropine and bandage.

February 14. Bandage very loose. Wound healed, but shred of vitreous in the wound. Eye painful last night. Atropine and bandage.

February 15. Iritis with hypopyon. No pain. Removed shred of vitreous. Ordered atropine and hot bathing every hour.

March 26 Eye too soft and flushing readily. Pupil occluded and iris drawn towards incision made February 13.

April 18. Free iridotomy. Anterior chamber filled with blood.

May 5. Blood not quite absorbed; iridotomy closed. For two days after the last iridotomy the eye was very painful.

July 8. Dr. Bruns made iridotomy down and inwards, at right angles to stretched fibers of iris, with von Graefe knife, under chloroform anæsthesia.

July 9. Little blood in anterior chamber, little reaction, and no vision.

July 21. A small opening in the iris remains, but there is still some obscuring membrane behind it.

August 5. A second and more extensive iridotomy at same spot, discising the obstructing membrane and enlarging the coloboma, is made, under chloroform, by Dr. Bruns.

August 6. Anterior chamber filled with blood. Ordered frequent hot baths.

August 13. Blood beginning to clear away.

August 24. Blood has disappeared. No vision.

September 8. No blood in anterior chamber. The false pupil, situated down and inwards, almost round and about $^{2}/_{16}$ of an inch in diameter, looks clear. V.=$^{6}/_{200}$.

October 29. V., R. E.=$^{15}/_{200}$ with + 3 s. = $^{20}/_{50}$.

January 2, 1897. V. R. E.=$^{20}/_{200}$; L. E.=$^{10}/_{200}$; R. E. with + 3 s. ⊃ + 3 c. ax. 105° = $^{20}/_{50}$. She can not read with this eye (right) with any glass at any distance; however, L. E. with — 3 s.=Sn. No. 1 at 8 inches. Therefore she is ordered R. E. + 3 s. ⊃ + 2.50 c. ax. 105° for far; L. E. — 3 s. for near.

January 7. Glasses satisfactory. R. E.=$^{20}/_{50}$; L. E.=$^{10}/_{200}$. Can read Sn. No. 1 at 8 inches with left eye.

This case seems noteworthy because:

1. It is the first of the kind reported from the far South, I believe.

2. It is evident that the operator made too free a discision at the first operation. In all such cases the first operation should be slight and tentative.

3. It was a mistake to have become impatient over the progress of absorption after the lapse of fifteen days only. The loss of an essentially healthy eye, having highly useful vision, as the result of an operation intended to improve that vision,

must be regarded as an unmitigated misfortune. In such a case the element of time should be allowed no consideration; the safest, and only the safest method, is to be followed. There is no doubt, I believe, that discision is far safer than any of the methods of extraction, and so long as absorption is progressing favorably no effort at extraction, either with or without suction or washing, should be undertaken. It is to be remembered that in these cases in which one or more discisions have have been made, the posterior capsule has, in all probability, been either penetrated or ruptured, and a corneal incision is almost sure to invite prolapse of the vitreous. In this case the posterior capsule was evidently intact as no prolapse followed the incision, but in using the Lippincott syringe the operator in an unguarded moment allowed the nozzle to press too far backwards and so caused the loss of vitreous. Great care must be taken in washing out cortex with this instrument to keep the point of the nozzle against the posterior surface of the cornea and allow the regurgitating fluid to do the work.

4. The three iridotomies made before success was obtained shows how much may be done in such cases by cautious perseverence and insistance. The failure of the first was due to its not being made at right angles to the direction of greatest tension. The second and third were made by what, for lack of a better name, I and my assistants have been wont to call the "somerset operation," elsewhere described. The first operation failed because the opening was too small and a fine, false membrane (fibrin ?) spread itself over the new pupil. The field of operation was small and the execution of the manœuvre very difficult, but the last operation was successful by piercing and cutting the false membrane and by so enlarging the artificial pupil that the fibrin of the extravasated blood was not able to bridge it over and give rise to a new membrane.

The very slow progress of such cases and the patience that must often be exercised in conducting them to a successful termination is well illustrated by the course of this case after the last iridotomy. It was twenty days before the blood was completely gone from the anterior chamber; thirty-four days before any vision was obtained, and eighty-five days before the final result, $^{20}/_{50}$, was had. We could never get the patient to read any ordinary sized print, at any distance, with any glass, before the operated eye, though with — 3 s. before

the unoperated one she read Sn. No. 1 at 8 inches; nor could we account for the phenomenon.

The operation for the removal of the lens in high myopia seems to me a a most reasonable one and one that time and a greater accumulation of experience should prove a most beneficent one. The progress of highm yopia is, the pathological basis aside, according to all our theories, dependent upon the excessive use of the longitudinal fibres of the ciliary muscle or the excessive use of the extrinsic muscles in convergence; probably upon both. Removal of the lens at once abolishes accommodation and by suitable lenses we can remove the near point to any distance that we please and so render the effort of convergence much less violent. In the case of a person with extreme myopia in one eye only, the other being but moderately affected, lenses which fully correct the defect of each eye are so dissimilar as to be unsatisfactory, ill-balanced, intolerable. By removal of the lens from the ultra-myopic eye, lenses of much the same strength can be used, general excellence of vision is much increased and comfort greatly promoted. In such a case the patient will depend for near vision on the myopic eye, or a pair of spectacles can be arranged for near work in which the near point of the aphakic eye is made by means of a convex lens to correspond with that of the moderately myopic one.

SOCIETY PROCEEDINGS.

BRITISH MEDICAL ASSOCIATION.—SECTION OF OPHTHALMOLOGY.

Meeting Held in Edinburgh.

After the President (Dr. Argyll Robertson) had opened the Section of Ophthalmology with an address, Professor Nuel (Liège) read a paper on "The Absorption of Aqueous Humor by the Iris." He pointed out by the aid of diagrams the presence of lymphatic channels in the iris of the dog and cat. Indian ink was injected into the vitreous of the eyes of these animals and the passage of the ink traced into canals in the iris. By staining with silver nitrate he had found canals and stomata, the canals increasing in size towards the ligamentum

pectinatum. He applied the results of these experiments to the causation of glaucoma, and pointed out that iridectomy opened up the channels. Mydriatics also had the same effect, thus increasing the flow from the eye. Professor Nuel then showed lantern slides illustrative of his paper.

Dr. Berry (Edinburgh) made some remarks on the result of the injection of chlorine water into the vitreous in septic cases.

Professor Nuel, in reply, stated that absorption took place from the anterior surface of the iris, and this was the principal area of absorption in the eye.

Dr. Reid (Glasgow) next showed some lantern specimens illustrative of reparative processes following wounds of the cornea, and specimens of the intercalary cells met with in the cornea.

Dr. George Mackay and Dr. J. C. Dunlop (Edinburgh) then read a paper on "A Case of Acquired Color-Blindness," which came on suddenly in a patient suffering from cancer of the stomach. The patient's vision was good, media clear, refraction emmetropic, fields of vision good to hand movements, but restricted to more accurate measurement. Five months after the color-blindness came on the patient died. The post-mortem examination revealed cancer of the pylorus and atrophy of the posterior end of the occipito-temporal convolution of the right occipital lobe, with general shrinkage of the right occipital lobe. On section the left occipital lobe was found slightly affected and the arteries and capillaries extremely thickened. Lantern specimens of the brain and arteries were then shown.

Dr. Berry (Edinburgh) spoke on the difficulty of prov ng the existence of a color center apart from a center of form, the form-sense and color-sense being closely associated.

Dr. M'Kenzie Davidson (London) gave a demonstration on the employment of Roentgen rays in ophthalmology. He had used them in forty-one cases of foreign body in the orbit with satisfactory results. He showed the apparatus he used, and gave a demonstration of his methods on a patient. His principle was based on getting three co-ordinates of a point; the three planes were formed by two knitting kneedles fixed on the apparatus, one vertical, the other horizontal crossing one another, and by the photographic plate. The patient's

head was fixed, the axis of his eye being parallel to the horizontal needle. A fine Crookes' tube was used in two positions, 6 cm. apart, the two plates thus obtained being afterwards placed in stereoscopic relief. A piece of lead wire was previously placed on the patient's lower lid to form a known point from which the position of the foreign body could be calculated. This was worked out by means of a separate apparatus. A number of lantern slides illustrative of the apparatus and of skiagraphs were then shown.

Mr. Treacher Collins (London) showed a number of lantern slides illustrative of foreign bodies in the eye, which had been localized by Dr. M'Kenzie Davidson by skiagraphy, and afterwards successfully removed. He advocated the early use of the rays in all cases of suspected foreign bodies in the eye.

Mr. Cargill (London) mentioned five cases in which Dr. M'Kenzie Davidson's method had proved of great value in deciding the presence, situation, or absence of foreign bodies.

Dr. Reeve (Toronto) showed an apparatus made by Dr. Sweet (Philadelphia), and Professor M'Hardy (London) spoke of two cases in which skiagraphy had proved most important.

Dr. Hinshelwood (Glasgow) read a paper on "Holocaine," and advocated its use as an anæsthetic in eye work; it acted more rapidly than cocaine.

Mr. Edgar Browne (Liverpool) said that he used it in all superficial operations, as it had no harmful action on the cornea.

Dr. Argyll Robertson said his experience led him to consider that holocaine was much inferior to cocaine, but Dr. Hinshelwood said that he believed that most cases of failure were due to imperfectly prepared solutions.

Dr Leslie Buchanan (Liverpool) then showed some specimens of leucosarcoma of the choroid.

Professor Snellen (Utrecht) gave a "Historical Review of Operative Treatment of Strabismus" from the first operation by Professor Dieffenbach in 1839 onwards. He compared the operations of von Graefe and of Priestley Smith, and described the operation he himself had adopted. He emphasized the importance of producing as little injury to surrounding tissues as possible, thus preventing subsequent cicatrization and shortening of the muscle. He advocated removal of a portion of the tendon in many cases. Chloroform should not be used, but a local anæsthetic, as cocaine.

A discussion ensued, in the course of which Dr. Little said that he did not fully correct the squint at the time of operation. At the same time, he laid stress on the importance of the use of glasses, especially in young children.

Dr. Berry said he believed that cases of insufficiency after tenotomy were due to too free division, to a less extent the following cicatricial contraction might be a cause.

Dr. Argyll Robertson drew attention to Mr. Critchett's operation in cases where divergence had resulted from previous operation.

Professor Snellen replied, advocating the use of glasses, and the undesirability of any operation in very young children.

Mr. Lawford read a paper on an operative procedure for cases of incarcerated iris This consisted in passing a Graefe's knife through the margin of the cornea into the anterior chamber and out at the opposite side. He then divided the iris on each side of the adhesion.

Dr. Argyll Robertson preferred operating twice.

Professor Snellen said he considered the principal object of operating was to reduce tension. He performed sphincterotomy instead of iridectomy.

Dr. Berry thought that in the majority the tension was not increased. He did an iridectomy opposite the scar, or a double iridectomy one each side of the adhesion.

Dr. Little performed iridectomy as for glaucoma in all bad cases.

Mr. Lawford, in reply, expressed the opinion that the reduction of intraocular tension was the most important point.

Mr. R. Williams then read a paper on "A Case of Paralysis of Accommodation After Influenza." Each eye was affected, the left first.

Dr. Argyll Robertson said he had seen two similar cases which followed influenza, but he could not say that influenza had been the cause.

Mr. Juler mentioned cases of paralysis of the third nerve after influenza with complete recovery, and Dr. George Mackay several cases of unilateral paralysis of accommodation after influenza. One case was very persistent, but was temporarily relieved by eserine.

Mr. Edgar Browne said that paralysis of the third nerve after influenza was less rare than paralysis of the sixth and the optic nerve.

Mr Granger spoke of a patient who had not recovered from the paralysis.

Dr. Tatham Thompson read a paper on "A Case of Cyst of the Hyaline Canal Producing a Double Lens;" and Dr. Angus M'Gillivray read a paper on "The Hyaloid Canal and Its Relation to Cyclitic Exudation."

A paper on "The Diplo-Bacillus and the Conjunctivitis it Caused" was read by Dr. J. W. Eyre, and one on "The Bacteriology of the Normal Conjunctival Sac and Its Bearing on the Use of Antiseptics" by Mr. Arnold Lawson. He found many sacs free from organisms; out of 159 cases, 118 contained the bacillus xerosis. The pyogenic cocci were few, and when injected into the conjunctival sacs of guinea-pigs produced no reaction. He advocated asepsis. Dr. Eyre considered that the upper portion of the conjunctival sac was sterile, the lower part not so.

Dr. Juler (London) read a paper on "A Case of Symmetrical Gumma of the Ciliary Body, With Recovery of Vision," and reviewed the literature, pointing out the rarity of intraocular syphiloma.

Dr. Argyll Robertson said he had seen a number of cases in which the astigmatism produced had subsequently almost entirely disappeared, and Mr. Hill Griffith said that he had seen vision entirely destroyed in several cases. Mr. Juler replied.

Mr. Juler then read the second part of his paper on "A Case of Interstitial Keratitis, With Acquired Syphilis."

Dr. Hinshelwood and Mr. Lawson mentioned similar cases, and Dr. Argyll Robertson said he thought a distinction should be drawn between the characteristic cases of interstitial keratitis and cases of keratitis punctata. He considered that Mr. Juler's case belonged to the latter category.

Papers were also read by Mr. J. Fallows, Mr. H. E. Jones, Mr. Chas. Wray, Mr. John Griffith (London), and Dr. Adolph Bronner (Bradford).

Dr. M'Gillivray said that in America a solution of extract of suprarenal capsule had been used with cocaine to prolong the anæsthesia. He had tried it in one case with good results.

Dr. Reeve (Toronto) said suprarenal extract acted as a styptic as well, and rendered the operation a bloodless one.